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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,537	01/16/2002	Gary R. Skillman	110241	7726

27074 7590 09/02/2003

OLIFF & BERRIDGE, PLC.
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

PHAM, HAI CHI

ART UNIT PAPER NUMBER

2861

DATE MAILED: 09/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,537

Applicant(s)

SKILLMAN, GARY R.

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 5, 13, and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Each of the above claims recites the following limitation “the frequency modulator is a profile modulator for modulating the clock pulse generator with a periodic waveform (emphasis added)”, which is not supported by the specification where a periodic waveform is used to modulate the frequency of the clock signal outputted by the clock pulse generator. Instead, the specification only briefly mentions that “the modulator will continuously be modulating the frequency”.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1:

- Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The structural cooperative relationships between the array of light emitting diodes, the control unit, and the spread spectrum clock generator are provided such that one can understand how the separate units work as a system.

Claim 2:

- The following limitation “the spread spectrum clock generator ... to generate a spread spectrum output signal” as recited at lines 4-5 appears to be ambiguous in that it is unclear whether the above signal is the same as the “clock output signal” generated by the spread spectrum clock generator as recited in the base claim 1.

Claim 10:

- Similarly, the following limitation “the spread spectrum clock generator ... to generate a spread spectrum output signal” as recited at lines 4-5 appears to be ambiguous in that it is unclear whether the above signal is the same as the

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"clock output signal" generated by the spread spectrum clock generator as recited in the base claim 9/1.

Claims 3-9, 11-14 are dependent from claims 1, 10 above, and are therefore indefinite.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardin (U.S. 5,631,920) in view of Shimizu (U.S. 5,668,937).

Hardin, an acknowledged prior art, discloses a spread spectrum clock generator used in a laser beam printer, which comprises a laser light source, a control unit including a clock circuit for generating a clock output signal, and a spread spectrum clock generator for generating a clock output signal with reduced amplitude electromagnetic interference spectral components (see abstract).

However, Hardin fails to teach the laser printer including an array of light emitting diodes.

Regardless, it is old and well known in the printing art that a conventional laser printer forms an image onto a photosensitive drum by using a light emitting device such

as a laser beam or a light-emitting diode array as evidenced by Shimizu at col. 1, lines 41-48.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide light-emitting diode array as a light source as taught by Shimizu in the laser printer of Hardin. The motivation for doing so would have been to provide a simpler and more accurate printing engine than a laser beam printing engine would allow since the latter uses a rotational scanner for forming an image on the surface of the photosensitive drum.

With regard to claims 2-5, 9-13, Hardin further teaches:

- the clock circuit is coupled to an oscillator for generating a reference frequency signal, and the spread spectrum clock generator coupled to the oscillator to generate a spread spectrum output signal having a fundamental frequency and reduced amplitude EMI spectral components at harmonics of the fundamental frequency (col. 2, lines 32-47),
- the spread spectrum clock generator comprises a clock pulse generator and a spread spectrum modulator (col. 2, lines 32-47),
- the spread spectrum modulator is a frequency modulator (col. 2, lines 64-66),
- the frequency modulator is a profile modulator for modulating the clock pulse generator with a periodic waveform (col. 2, line 66 to col. 3, line 9),
- a photoreceptor on which a latent image is formed (col. 8, lines 29-37).

The method claims 15-16 are deemed to be clearly anticipated by functions of the above structures.

7. Claims 6, 14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardin in view of Shimizu, as applied to claims 1, 3, 12, 15 above, and further in view of Zhang et al. (U.S. 6,240,123 B1).

Hardin, as modified by Shimizu, discloses all the basic limitations of the claimed invention except for the spread spectrum modulator varies up and down at an asynchronous rate to a clock strobe pulse.

Zhang et al. discloses an asynchronous spread spectrum modulation technique to generate spread spectrum clock signal, which is asynchronous to the reference clock signal to further reduce the total spectral energy that would otherwise contribute to the EMI emissions.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Hardin with the aforementioned teaching of Zhang et al. The motivation for doing so would have been to reduce the total spectral energy that would otherwise contribute to the EMI emissions as suggested by Zhang et al.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER

August 21, 2003